

CLAIMS:

1. A DC/DC down converter which comprises a synchronous rectifier, a switching element at its input side, an inductance at its output side and an auxiliary circuit which includes an auxiliary switching element, an auxiliary rectifier and an auxiliary inductance, the auxiliary circuit being coupled to the connection between the synchronous rectifier, the switching element at the input side and the inductance at the output side.

2. A DC/DC down converter as claimed in claim 1, characterized in that first terminals of the auxiliary switching element, of the auxiliary rectifier and of the auxiliary inductance are connected to one another,

10 - the second terminal of the auxiliary switching element being connected to an input terminal of the down converter,

- the second input terminal of the down-converter being connected to the second terminal of the auxiliary rectifier and to a terminal of the synchronous rectifier, and

- the second terminal of the auxiliary inductance being connected to the second terminal of the synchronous rectifier.

15 3. A DC/DC down converter as claimed in claim 1 or 2, characterized in that it is arranged to turn on the auxiliary switching element while the synchronous rectifier is turned on and while the switching element at the input side is turned off, and also that the auxiliary switching element is turned off after the subsequent turning off of the synchronous rectifier.

20 4. A DC/DC down converter as claimed in one of the claims 1 to 3, characterized in that it is arranged to turn on the switching element at the input side, being implemented as a field effect transistor, when a current flows in the forward direction of the body diode of the 25 switching element at the input side.

5. A DC/DC down converter as claimed in one of the claims 1 to 3, characterized in that it is arranged to measure the voltage on the switching element at the input side and to

turn on the switching element at the input side only when the measured voltage on the switching element at the input side has reached a selectable threshold value.

6. A DC/DC down converter as claimed in one of the claims 1 to 5, characterized
5 in that it is arranged to turn off the synchronous rectifier, being implemented as a field effect
transistor, when a current flows from the connection between the synchronous rectifier, the
switching element on the input side and the inductance at the output side towards the
synchronous rectifier.